moving said flow control valve to said closed position when the pressure in the engine exceeds said predetermined threshold;

connecting said secondary pump element intake port with said secondary pump element discharge port, and blocking fluid flow from a fluid supply to said secondary pump element inlet port, when said flow control valve is in said closed position, such that the engine is provided with fluid through only said primary pump element discharge port;

providing a leak back mechanism to allow fluid to flow to said secondary pump element when said flow control valve is in or near said closed position, and

wherein said leak back mechanism is provided by substantially closing a second plunger portion that blocks fluid flow from said secondary pump element discharge port to the engine such that a small passage renders between a second plunger portion and said valve housing.

REMARKS

The Examiner has rejected claims 1, 2, 7, 9, 10, 16, and 22 under 35 U.S.C. §102(b) as anticipated by Killion. Additionally, the Examiner has rejected claims 3, 11, and 17 under 35 U.S.C. §103(a) as obvious over Killion in view of Andersson. The Examiner also rejected claims 4, 8, 12, and 18 under 35 U.S.C. §103(a) as obvious over Killion in view of Holloway. Further, the Examiner rejected claims 5, 6, 13, 14, 19, and 20 under 35 U.S.C. §103(a) as obvious over Killion in view of Yu.

The Examiner indicated that claims 15 and 21 were objected to and would be allowable if rewritten in independent form to include all of the limitations of the base claims and any intervening claims. Claims 23 and 24 have been newly added and represent claims 15 and 21 written in independent form incorporating the limitations of the claims from which they depend.

The Section 102 Rejections:

The Examiner rejected claims 1, 2, 7, 9, 10, 16, and 22 under 35 U.S.C. §102(b) as anticipated by Killion. The applicant respectfully traverses this rejection and requests the Examiner to reconsider same.

Million does not teach a leak back mechanism to allow fluid to flow around or through the valve mechanism to the recirculation conduit. The cross-over part 94 referred to

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by the Examiner does not allow fluid to flow around or through the valve member. The cross-over part is not in direct communication with the valve member, but is located away from the valve mechanism and allows fluid to flow from the second pump inlet to the engine.

Claims 1 and 16 require that the leak back mechanism allow fluid to flow around or through the valve member to the recirculation circuit when the valve is in a closed or a substantially closed position. Killion does not teach any leak back mechanism that allows fluid to flow through or around the valve member in order to prevent pump cavitation when the system is operating at high speeds. In fact, Killion specifically teaches away from such a configuration by entirely closing off fluid flow through the valve when the system is operating at high speed. Claims 1 and 16 are thus not anticipated by Killion.

Similarly, claim 9 requires a leak back mechanism that allows fluid to flow through or around the valve members to the secondary pump element when the valve is in or near the closed position. Again, Killion does not teach nor suggest such a leak back mechanism, as discussed above, and thus claim 9 is not anticipated by Killion.

Additionally, none of claims 1, 9, or 16 are obvious in view of Killion together with any of the other references of record. None of the Andersson, Holloway, nor Yu references suggest a combination that would arrive at Applicant's claimed invention. First, none of the references have both a primary and secondary pump element and do not disclose a dual pump system. As such, there is no motivation to arrive at Applicant's claimed invention. Further, none of the references of record teach a recirculation passageway and thus are not intended to solve the problems addressed by Applicant.

Specifically, Holloway teaches a directional flow control speed valve for a hydraulic power transmitting apparatus. The notches which the Examiner referred to as "bleeder notches," are "metering notches formed to create a low pressure sink." (Col. lns 48-50.) Holloway teaches that these notches are intended to "balance the forces at the directional flow chambers, thus creating an overall work cycle having few operator activation force variations". (Col. 2 ln 68 - Col. 3 ln 1.) The notches are not intended to allow fluid leak back to a pump to prevent pump cavitation, but instead to allow for force balancing on the valve. Thus there is no motivation or suggestion to combine Holloway and Killion to arrive at Applicant's claimed invention.

The Yu reference teaches a water saving valve which may be manipulated in order to regulate the flow of water through the valve during a shower. The valve in Yu can be moved

from one position allowing full fluid flow therethrough to a second position allowing restricted flow therethrough. The Yu reference does not teach a recirculation passageway or any connection with any pumps. More importantly, Yu does not teach nor suggest a leak back mechanism to prevent pump cavitation or overheating. As Yu does not regulate pump flow, cavitation or overheating is not an issue. The device in Yu merely relates to providing a valve with more than one flow speed. Thus, there is no motivation or suggestion to combine Yu with Killion to arrive at Applicant's claimed invention.

The Andersson reference discloses a fluid distribution valve for metering small flows to a plurality of demand locations in a first position and large flows in a second position. The valve has a plurality of throttle by-passes 9, which the Examiner referred to as bleeder notches. However, unlike Applicant's claimed invention which requires a leak back to prevent cavitation, the throttle by-passes 9 are intended to provide equal flow at the nozzles. This is accomplished by individually sizing the by-passes 9 to account for differences in the size and elevation of the nozzles. Thus, the plurality of by-passes 9 are intended to compensate for variation in the nozzles to provide for uniform flow through the nozzles and not to prevent cavitation and overheating of the pump. Thus, there is no motivation or suggestion to combine Andersson with Killion to arrive at Applicant's claimed invention.

Thus, it is respectfully submitted that claims 1, 2, 7, 9, 10, 16, and 22 define over the art of record and are in a condition for allowance.

The Section 103 Rejections

Claims 3, 4, 5, 6, 7, 8, 11, 12, 13, 14, 18, 18, 19, and 20 were rejected under Section 103 as obvious in view of Killion and one of the other references of record. It is respectfully submitted that claims 3, 4, 5, 6, 7, 8, 11, 12, 13, 14, 17, 18, 19, and 20 which depend from independent claims 1, 9, and 16 are allowable for the same reasons provided above in connection with the claims from which they depend.

Conclusion

It is respectfully submitted that all rejections and objections of record have been overcome and that all claims are now in condition for allowance. A Notice of Allowance is therefore respectfully solicited.

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If the Examiner should have any questions, he is urged to contact the undersigned.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

1. A dual pumping element fluid pump system comprising:

a primary pump element having an intake port that receives fluid from a fluid supply and a discharge port;

a secondary pump element having an intake port that receives fluid from a fluid supply and a discharge port;

a fluid flow control valve that is in fluid communication with said primary pump element and said secondary pump element [and] , said flow control valve having a valve member that is movable between a normally open position and a closed position;

a recirculation passageway that connects said secondary pump element discharge port with said secondary pump element intake port;

a leak back mechanism allowing fluid to flow around or through said valve member to said recirculation circuit when said valve is in said closed or substantially closed position to prevent cavitation or overheating of said secondary pump element;

wherein when said system is operating at low speeds, said fluid control valve is in said normally open position and said system is provided with fluid from said primary pump element discharge port and said secondary pump element discharge port; and

wherein when said system is operating at high speeds said fluid flow control valve is moved to said closed position directing said fluid from said secondary pump element discharge port through said recirculation passageway to said secondary pump element intake port.